FAA Partnership Conference Fort Worth TX March 2005

Session C Airport Engineering Contractor Quality Control

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Objectives of Presentation

- Provide Federal Aviation Administration (FAA) References
  - FAA Advisory Circulars (ACs)
  - FAA Orders
- Overview of FAA Headquarters and FAA Region Roles
- Questions / Dialog / Interaction

FAA Guidance

- FAA AC 150/5370-10A Standards for Specifying Construction of Airports
  - General Provisions (Sponsor, Engineer, Contractor)
  - Acceptance Testing Laboratory (Engineer)
    - Item P-401, Item P-501
- FAA Order 5100.38B AIP Handbook
  - Appendix 9 and Appendix 10 (Engineer)
  - Projects over $250,000 (Sponsor)
    - Appendix 7, Grant Condition T

FAA Order 5100.38B AIP Handbook

GENERAL GRANT SPECIAL CONDITIONS:

T. **PROJECTS WHICH CONTAIN PAVING WORK IN EXCESS OF $250,000:** The Sponsor agrees to perform the following:

a. Furnish a construction management program to FAA prior to the start of construction which shall detail the measures and procedures to be used to comply with the quality control provisions of the construction contract, including, but not limited to, all quality control provisions and tests required by the Federal specifications. The program shall include as a minimum:

(1) The name of the person representing the Sponsor who has overall responsibility for contract administration for the project and the authority to take necessary actions to comply with the contract.

(2) Names of testing laboratories and consulting engineer firms with quality control responsibilities on the project, together with a description of the services to be provided.

(3) Procedures for determining that testing laboratories meet the requirements of the American Society of Testing and Materials standards on laboratory evaluation, referenced in the contract specifications (D 3666, C 1077).

(4) Qualifications of engineering supervision and construction inspection personnel.

(5) A listing of all tests required by the contract specifications, including the type and frequency of tests to be taken, the method of sampling, the applicable test standard, and the acceptance criteria or tolerances permitted for each type of test.

(6) Procedures for ensuring that the tests are taken in accordance with the program, that they are documented daily, and that the proper corrective actions, where necessary, are undertaken.

FAA Order 5100.38B AIP Handbook

GENERAL GRANT SPECIAL CONDITIONS:

b. Submit at completion of the project, a final test and quality control report documenting the results of all tests performed, highlighting those tests that failed or that did not meet the applicable test standard. The report shall include the pay reductions applied and the reasons for accepting any out-of-tolerance material. An interim test and quality control report shall be submitted, if requested by the FAA.

c. Failure to provide a complete report as described in paragraph b, or failure to perform such tests, shall, absent any compelling justification, result in a reduction in Federal participation for costs incurred in connection with construction of the applicable pavement. Such reduction shall be at the discretion of the FAA and will be based on the type or types of required tests not performed or not documented and will be commensurate with the proportion of applicable pavement with respect to the total pavement constructed under the grant agreement.

d. The FAA, at its discretion, reserves the right to conduct independent tests and to reduce grant payments accordingly if such independent tests determine that sponsor test results are inaccurate.

FAA Order 5100.38B AIP Handbook

U.S. Department
of Transportation
Federal Aviation
Administration

Period Ending

CONSTRUCTION PROGRESS AND INSPECTION REPORT

AIRPORT GRANT PROGRAM

Project Number

5. Summary of Laboratory and Field Testing This Period *(Note failing tests and any retests. Summarize out-of-tolerance.)*

Material. *(Identify material subject to pay reduction.)*

7. Problem Areas/Other Comments *(Revisions to plans and specifications approved or denied, delays, difficulties, etc. and actions taken.)*

FAA Order 5100.38B AIP Handbook

Appendix 10. Final Inspection Report (FAA Form 5110-17)

3 SUMMARY OF TEST RESULTS Describe any unusual construction or installation conditions. If unsatisfactory ineligible work which can adversely affect eligible work exists, explain in detail. If previous inspection reports indicate unsatisfactory work, give date of inspection and comment on conditions found at the time of this inspection.

Laboratory Accrediting Authorities

A2LA
http://www.a2la.org/

NVLAP
http://ts.nist.gov/ts/htdocs/210/214/scopes/programs.htm

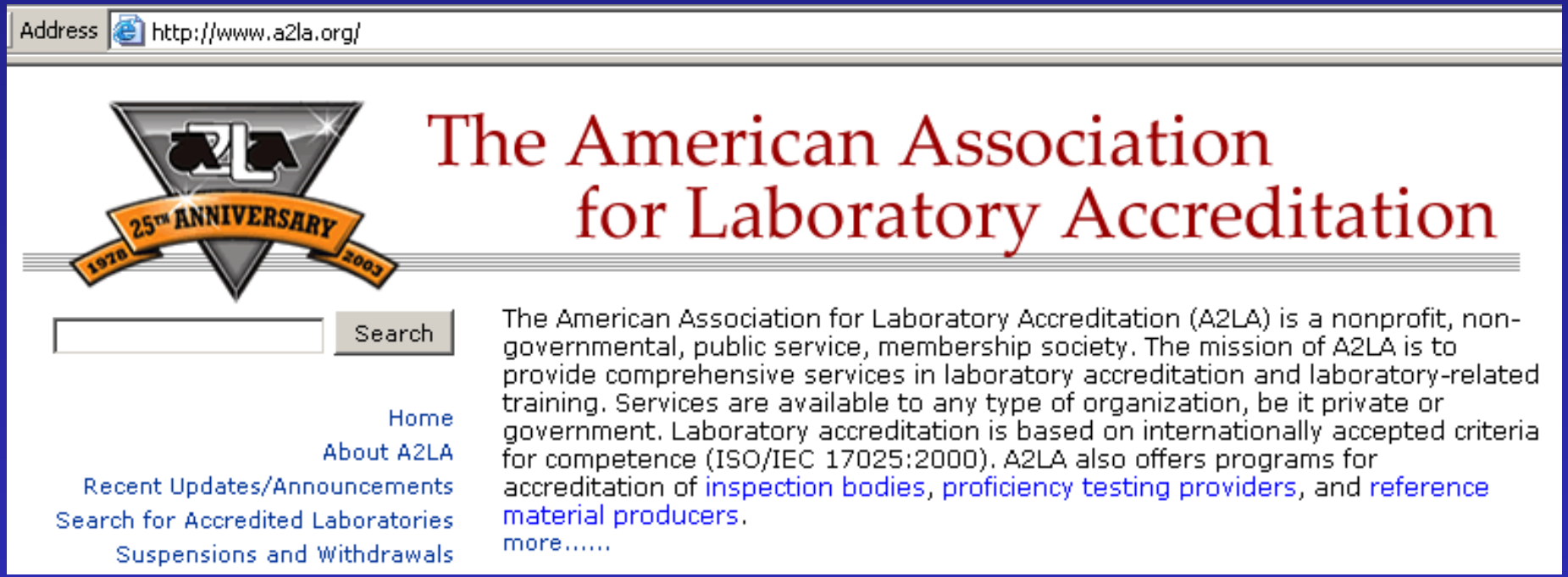
Corps of Engineers
http://www.wes.army.mil/SL/MTC/mtc.htm

CCRL
http://www.ccrl.us/

AASHTO
http://amrl.net/Portal/DesktopDefault.aspx?tabindex=0&tabid=20

CMEC
http://www.cmec.org/lab_c1077.asp

A2LA


Address
http://www.a2la.org/
25TH ANNIVERSARY
1978
2003
The American Association for Laboratory Accreditation
Search
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Recent Updates/Announcements
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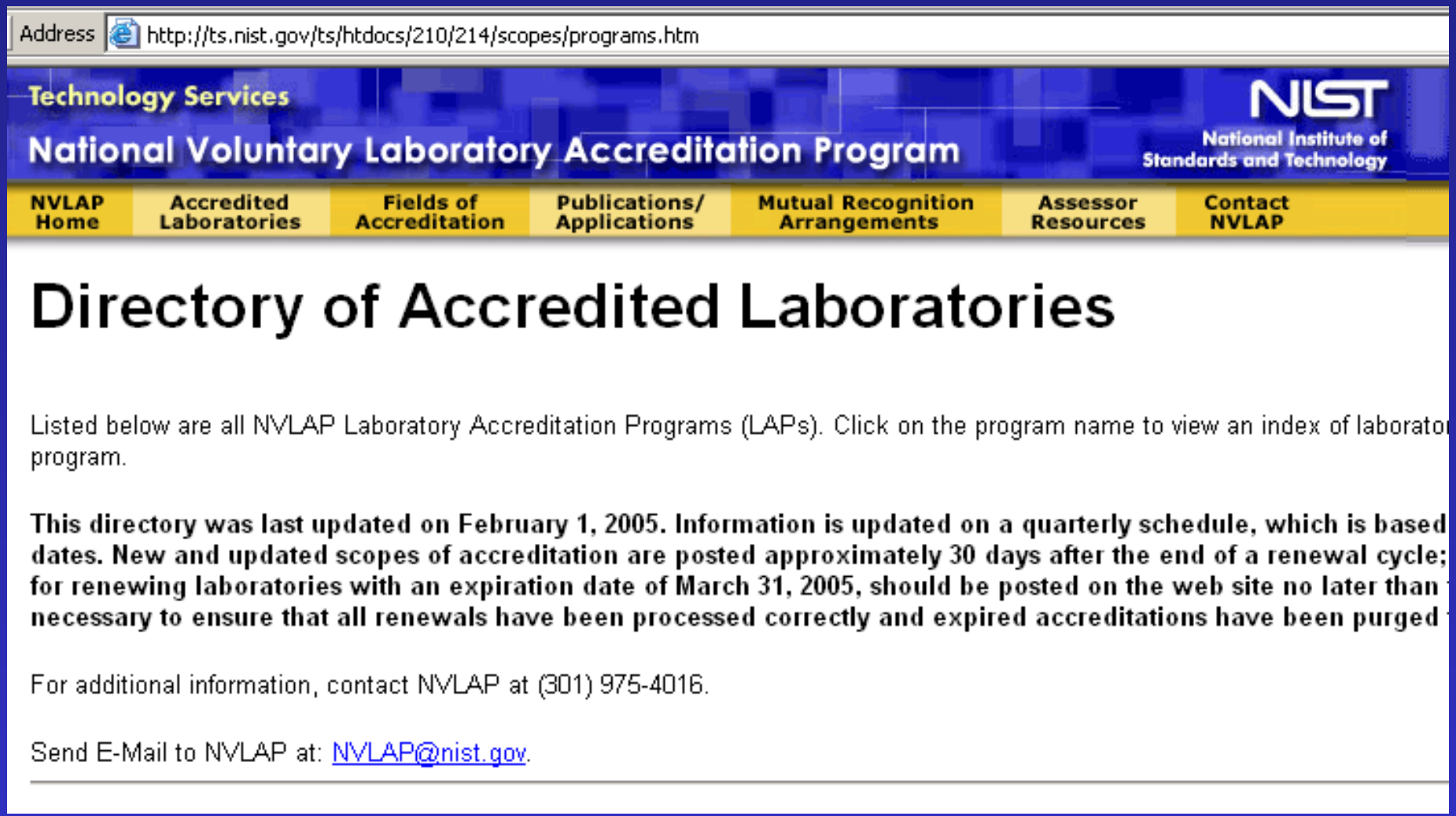
Suspensions and Withdrawals
The American Association for Laboratory Accreditation (A2LA) is a nonprofit, non-governmental, public service, membership society. The mission of A2LA is to provide comprehensive services in laboratory accreditation and laboratory-related training. Services are available to any type of organization, be it private or government. Laboratory accreditation is based on internationally accepted criteria for competence (ISO/IEC 17025:2000). A2LA also offers programs for accreditation of inspection bodies, proficiency testing providers, and reference material producers.
more.....

NVLAP


Address
http://ts.nist.gov/ts/htdocs/210/214/scopes/programs.htm
Technology Services
National Voluntary Laboratory Accreditation Program
NIST
National Institute of Standards and Technology
NVLAP Home
Accredited Laboratories
Fields of Accreditation
Publications/ Applications
Mutual Recognition Arrangements
Assessor Resources
Contact NVLAP
Directory of Accredited Laboratories
Listed below are all NVLAP Laboratory Accreditation Programs (LAPs). Click on the program name to view an index of laborato
program.
This directory was last updated on February 1, 2005. Information is updated on a quarterly schedule, which is based
dates. New and updated scopes of accreditation are posted approximately 30 days after the end of a renewal cycle;
for renewing laboratories with an expiration date of March 31, 2005, should be posted on the web site no later than
necessary to ensure that all renewals have been processed correctly and expired accreditations have been purged
For additional information, contact NVLAP at (301) 975-4016.
Send E-Mail to NVLAP at: NVLAP@nist.gov.

Corps of Engineers

Address http://www.wes.army.mil/SL/MTC/mtc.htm

Materials Testing Center

Services

Staff

Inspection

Validated Laboratories

The Engineer Research and Development Center's Materials Testing Center (MTC) is committed to quality testing and inspection services that are delivered on time and meet the requirements of its customers. The work includes planning and executing testing programs, investigations, and studies that involve civil and military applications of geotechnical, concrete and materials, and structural engineering; soil and rock mechanics; geology; and airfields and pavements. The MTC provides commercial laboratory inspection services to U.S. Army Engineer Districts, to ensure compliance with Engineer Regulations 1110-1-8100 (Laboratory Investigations and Testing) and 1110-1-261 (Quality Assurance of Laboratory Testing Procedures).

Materials Testing Center **Fact Sheet**

Corps of Engineers

Address http://www.wes.army.mil/SL/MTC/ValidatedLabsList.htm#TX

GeoTesting Express of Texas, Inc.

2016 East Randol Mill, Suite 413
Arlington, Texas 76011
(817) 861-9090

Expiration Date: December 11, 2005

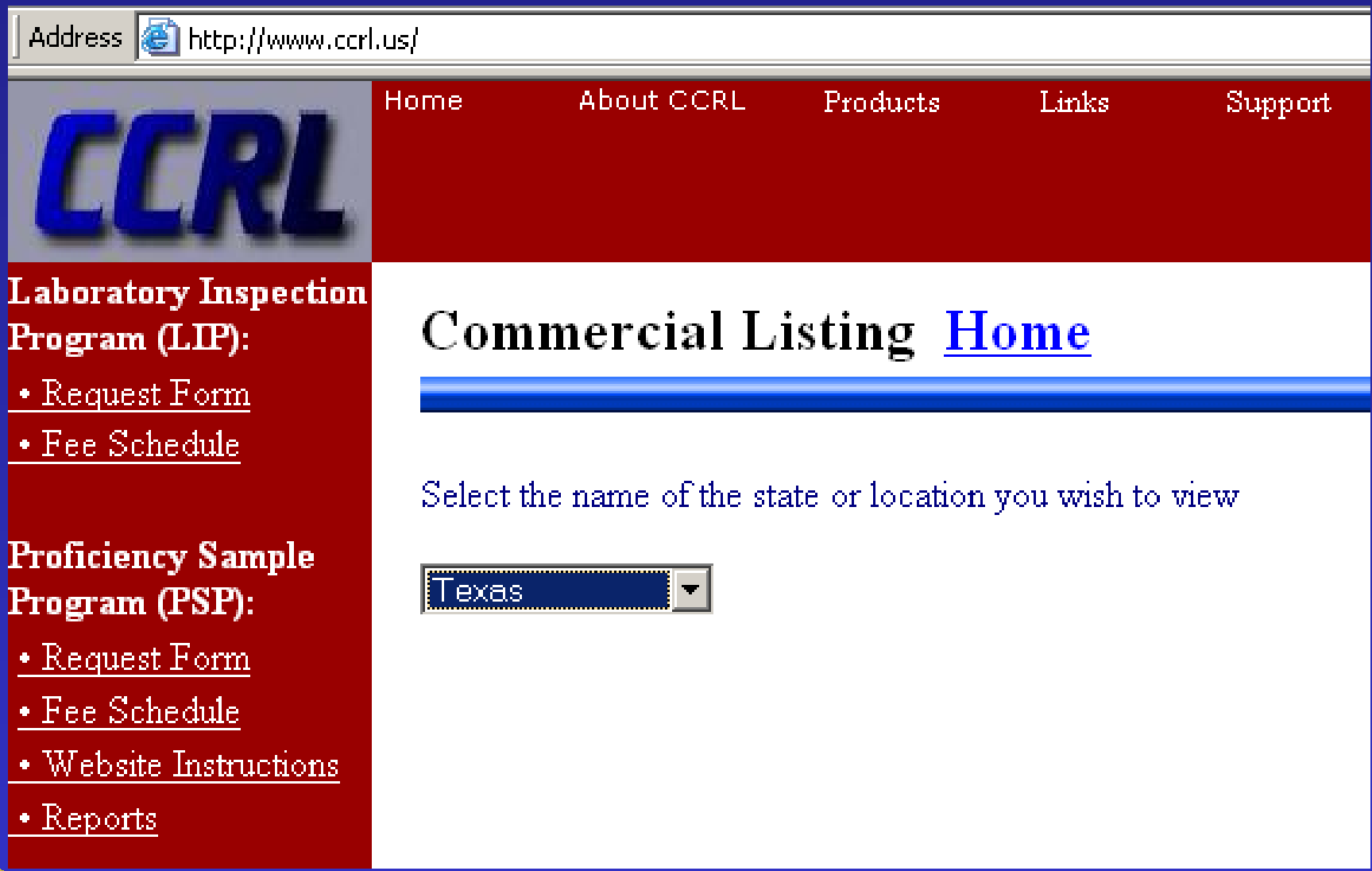
Aggregate: ASTM C40 C117 C127 C128 C136 C142 D75

Bituminous: ASTM D140 D2041 D2726 D2950 D3666

Concrete: ASTM C31 C39 C138 C143 C172 C231 C1064 C192 C470 C511 C642 C1077 C1231

Soils: ASTM D421 D422 D698 D854 D1140 D1556 D1557 D2216 D2217 D2487 D2488 D2922 D3017 D3740 D4318 D4643

CCRL


Address
http://www.ccrl.us/
CCRL
Home
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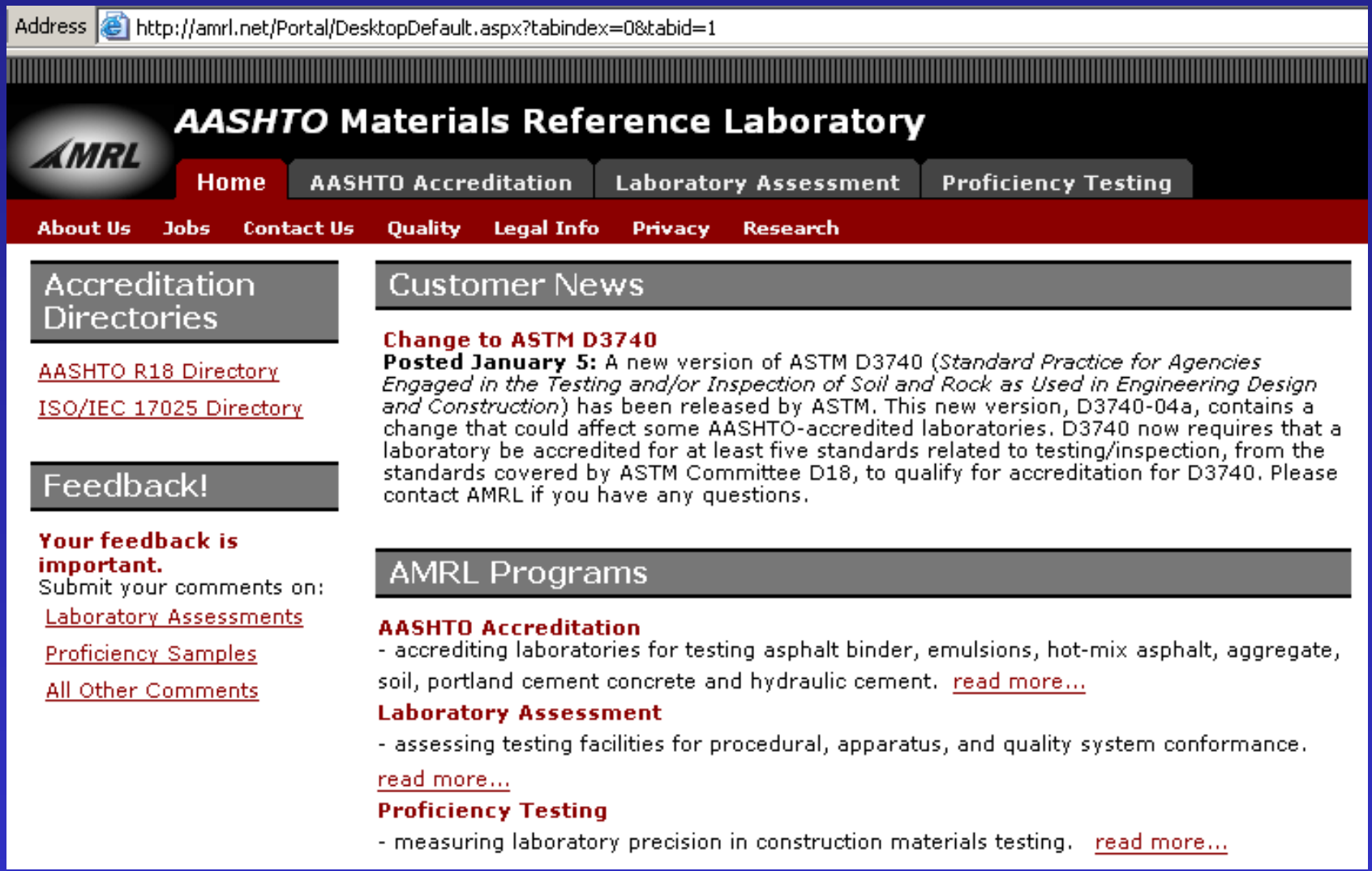
Products
Links
Support
Laboratory Inspection Program (LIP):
• Request Form
• Fee Schedule
Proficiency Sample Program (PSP):
• Request Form
• Fee Schedule
• Website Instructions
• Reports
Commercial Listing Home
Select the name of the state or location you wish to view
Texas

AASHTO (AMRL)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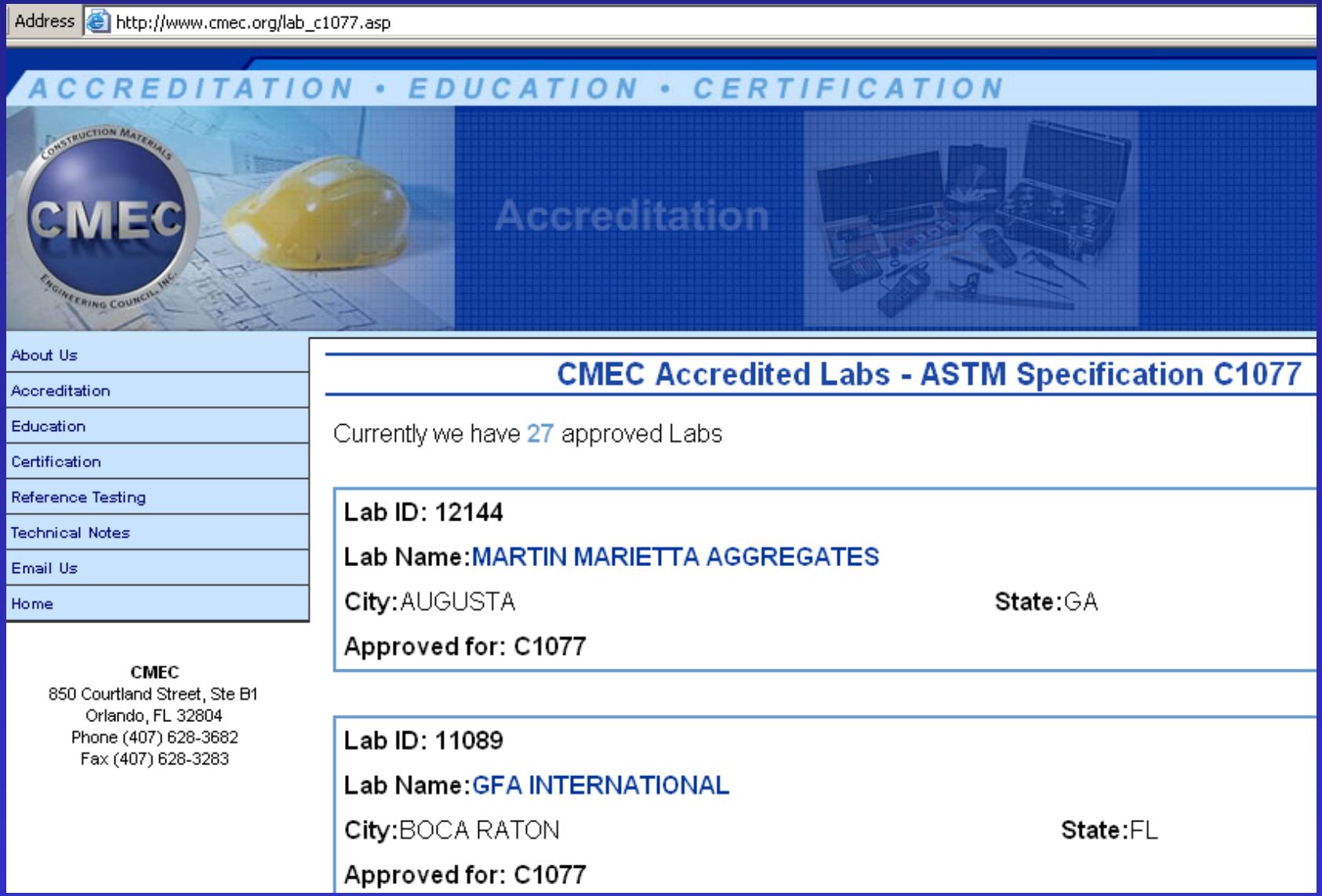
http://amrl.net/Portal/DesktopDefault.aspx?tabindex=0&tabid=1
AMRL
AASHTO Materials Reference Laboratory
Home
AASHTO Accreditation
Laboratory Assessment
Proficiency Testing
About Us
Jobs
Contact Us
Quality
Legal Info
Privacy
Research
Accreditation Directories
AASHTO R18 Directory
ISO/IEC 17025 Directory
Feedback!
Your feedback is important.
Submit your comments on:
Laboratory Assessments
Proficiency Samples
All Other Comments
Customer News
Change to ASTM D3740
Posted January 5: A new version of ASTM D3740 (Standard Practice for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction) has been released by ASTM. This new version, D3740-04a, contains a change that could affect some AASHTO-accredited laboratories. D3740 now requires that a laboratory be accredited for at least five standards related to testing/inspection, from the standards covered by ASTM Committee D18, to qualify for accreditation for D3740. Please contact AMRL if you have any questions.
AMRL Programs
AASHTO Accreditation
- accrediting laboratories for testing asphalt binder, emulsions, hot-mix asphalt, aggregate, soil, portland cement concrete and hydraulic cement. read more...
Laboratory Assessment
- assessing testing facilities for procedural, apparatus, and quality system conformance.
read more...
Proficiency Testing
- measuring laboratory precision in construction materials testing. read more...

CMEC


Address
http://www.cmec.org/lab_c1077.asp
ACCREDITATION • EDUCATION • CERTIFICATION
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Certification
Reference Testing
Technical Notes
Email Us
Home
CMEC
850 Courtland Street, Ste B1
Orlando, FL 32804
Phone (407) 628-3682
Fax (407) 628-3283
CMEC Accredited Labs - ASTM Specification C1077
Currently we have 27 approved Labs
Lab ID: 12144
Lab Name:MARTIN MARIETTA AGGREGATES
City:AUGUSTA
State:GA
Approved for: C1077
Lab ID: 11089
Lab Name:GFA INTERNATIONAL
City:BOCA RATON
State:FL
Approved for: C1077

http://www.faa.gov/arp

Airport Design, Engineering, & Construction

Publications & Forms

Advisory Circulars	**AC No.**
Airport Design	150/5300-13
▸ Aircraft Characteristic Database Replaces Appendices 12 and 13	
Airport Pavement Design and Evaluation	150/5320-6
▸ See Layered Elastic Pavement Design version 1.3 (LEDFAA13.EXE)	
Engineering Construction Specifications	150/5370-10

AC 150/5370-10A

- CONTRACTOR QUALITY CONTROL PROGRAM ADDED TO THE GENERAL PROVISIONS in 1994. The Contractor submits a program to the engineer for review. The program becomes a living document that shows how the contractor expects to deal with all process-control issues.
- Referenced from Item P-401 and Item P-501
  - About 90% of Runways are HMA
  - About 10% of Runways are PCC
- Minimum requirements for the program are specified, CONTRACTOR has full responsibility.

Contractor Quality Control Program

- Quality Control Technicians:
- May be engineers, engineering technicians or experienced craftsmen with appropriate qualifications equivalent to:
  - NICET Level II or higher construction materials or highway construction technician, or
  - Certification by state or nationally recognized organization.

Quality Control Technicians

- NICET National Institute for Certification in Engineering Technologies
- SAT Society of Asphalt Technologists
- DOT QC/QA Certification
- New England Transportation Technician Certification Program
  - FAA New England Region is a partner in this effort.
- FHWA effort to standardize Technical Requirements for Construction Materials Testing

General Provisions Section 100

The Quality Control Program shall be organized to address, as a minimum, the following items:

a. Quality control organization;
b. Project progress schedule;
c. Submittals schedule;
d. Inspection requirements;
e. Quality control testing plan;
f. Documentation of quality control activities; and
g. Requirements for corrective action when quality control and/or acceptance criteria are not met.

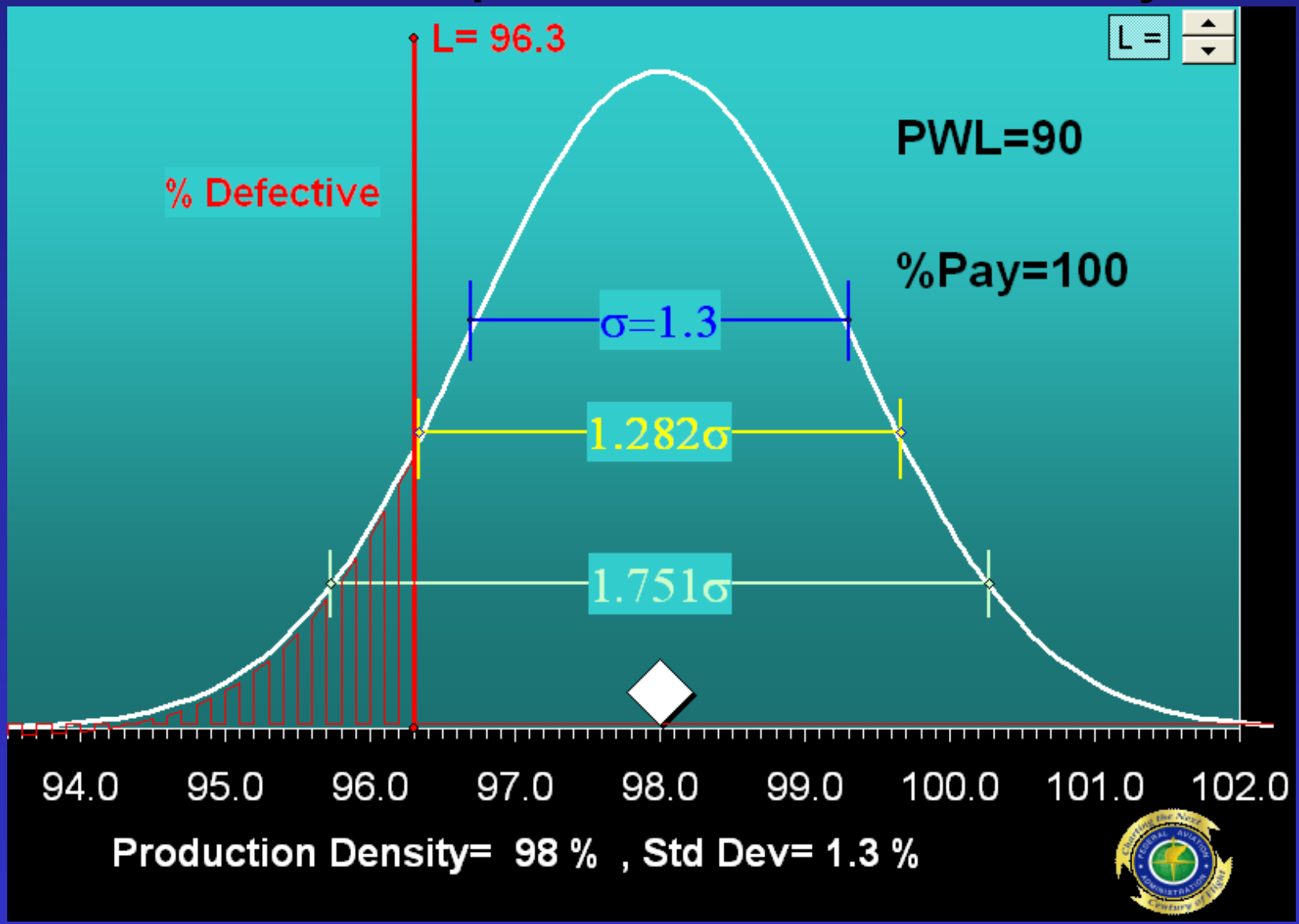
Item P-401 Contractor QC Program

- QUALITY CONTROL PROGRAM. The Contractor shall address all elements which effect the quality of the pavement including, but not limited to:
- Mix Design
- Mixing and Transportation
- Aggregate Grading
- Placing and Finishing
- Quality of Materials
- Joints, Stockpile Management
- Compaction
- Proportioning
- Surface smoothness

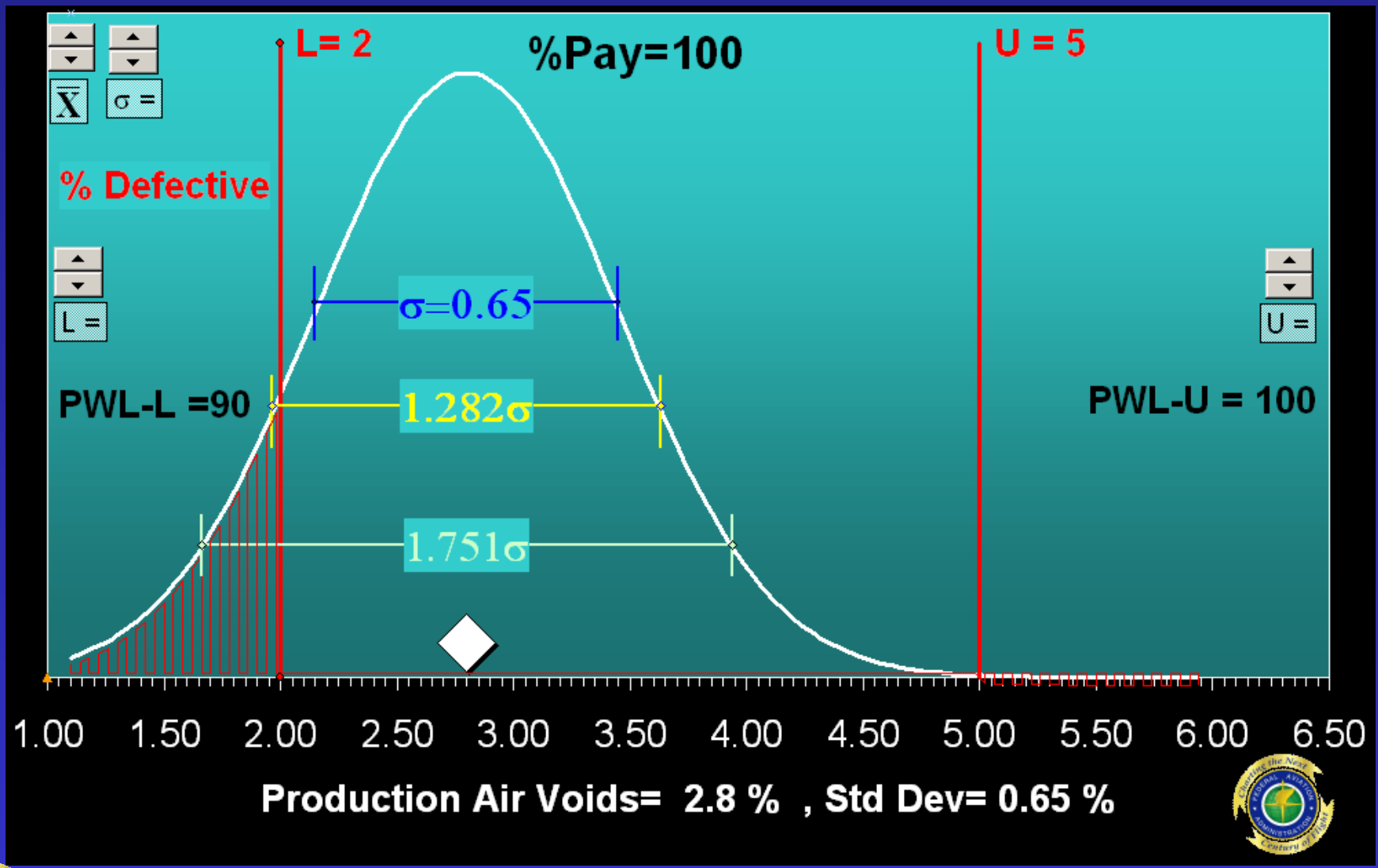
Item P-401 Contractor QC Program

- Asphalt Content. A minimum of two extraction per lot.
- Gradation. A minimum of twice per lot.
- Moisture Content of Aggregate. A minimum of once per lot.
- Moisture Content of Mixture. Once per lot.
- Temperatures. At least four times per lot, at necessary locations (dryer, bitumen storage tank, mixture at the plant, and mixture at the job site).
- In-Place Density Monitoring. Nuclear gauge may be used to monitor the pavement density.
- Additional Testing. Any additional testing that the Contractor deems necessary.

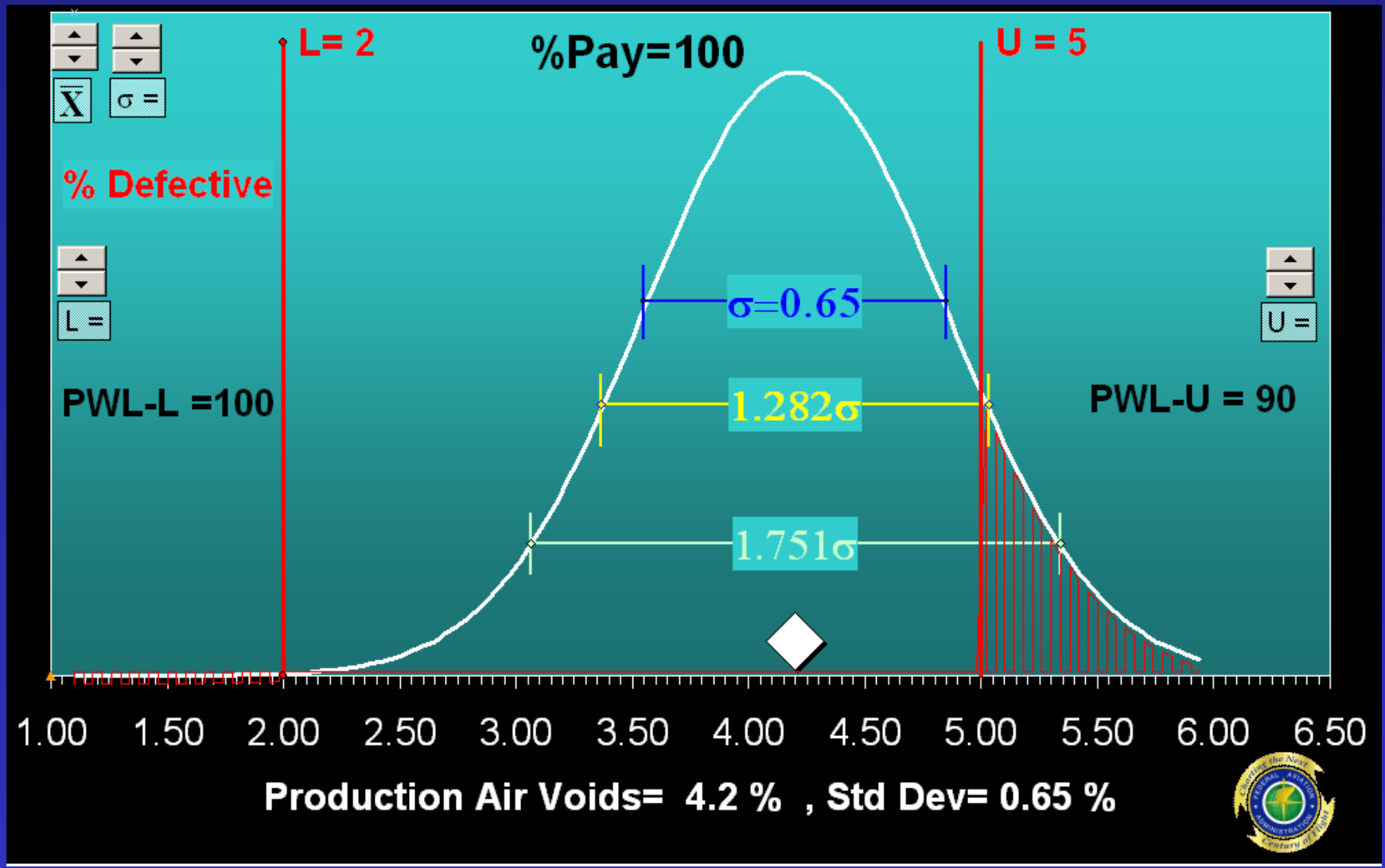
FAA Assumption for Mat Density



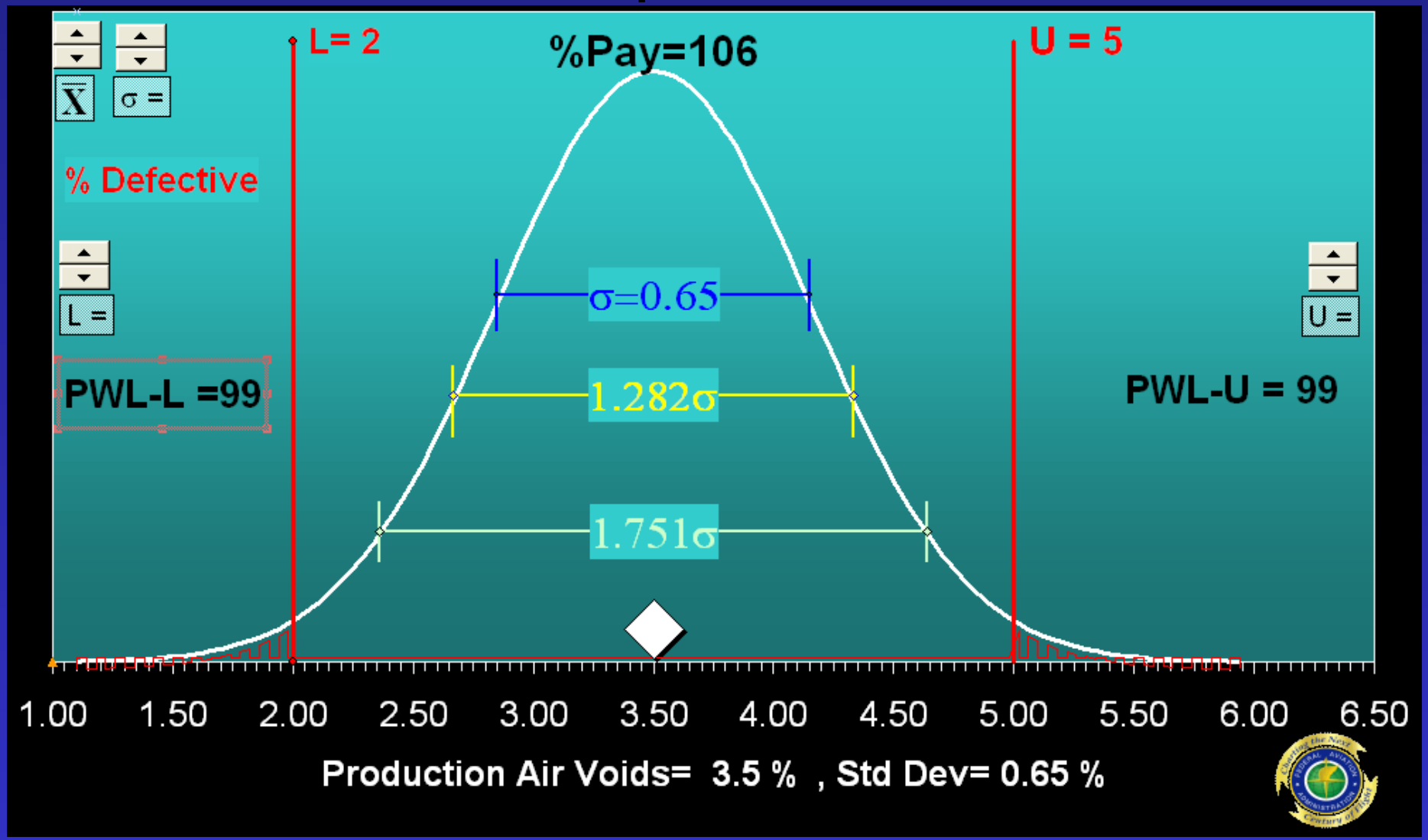
FAA Assumption for Air Voids



FAA Assumption for Air Voids



FAA Assumption for Air Voids



Item P-501 Contractor QC Program

- QUALITY CONTROL PROGRAM. The Contractor shall address all elements which effect the quality of the pavement including but not limited to:
- Mix Design, Proportioning, Mixing and Transportation
- Dowel Placement and Alignment
- Aggregate Gradation
- Flexural or Compressive Strength
- Quality of Materials
- Placing and Consolidation
- Finishing and Curing
- Stockpile Management
- Joints, Surface Smoothness
- CORRECTIVE ACTION IDENTIFIED FOR ALL ITEMS

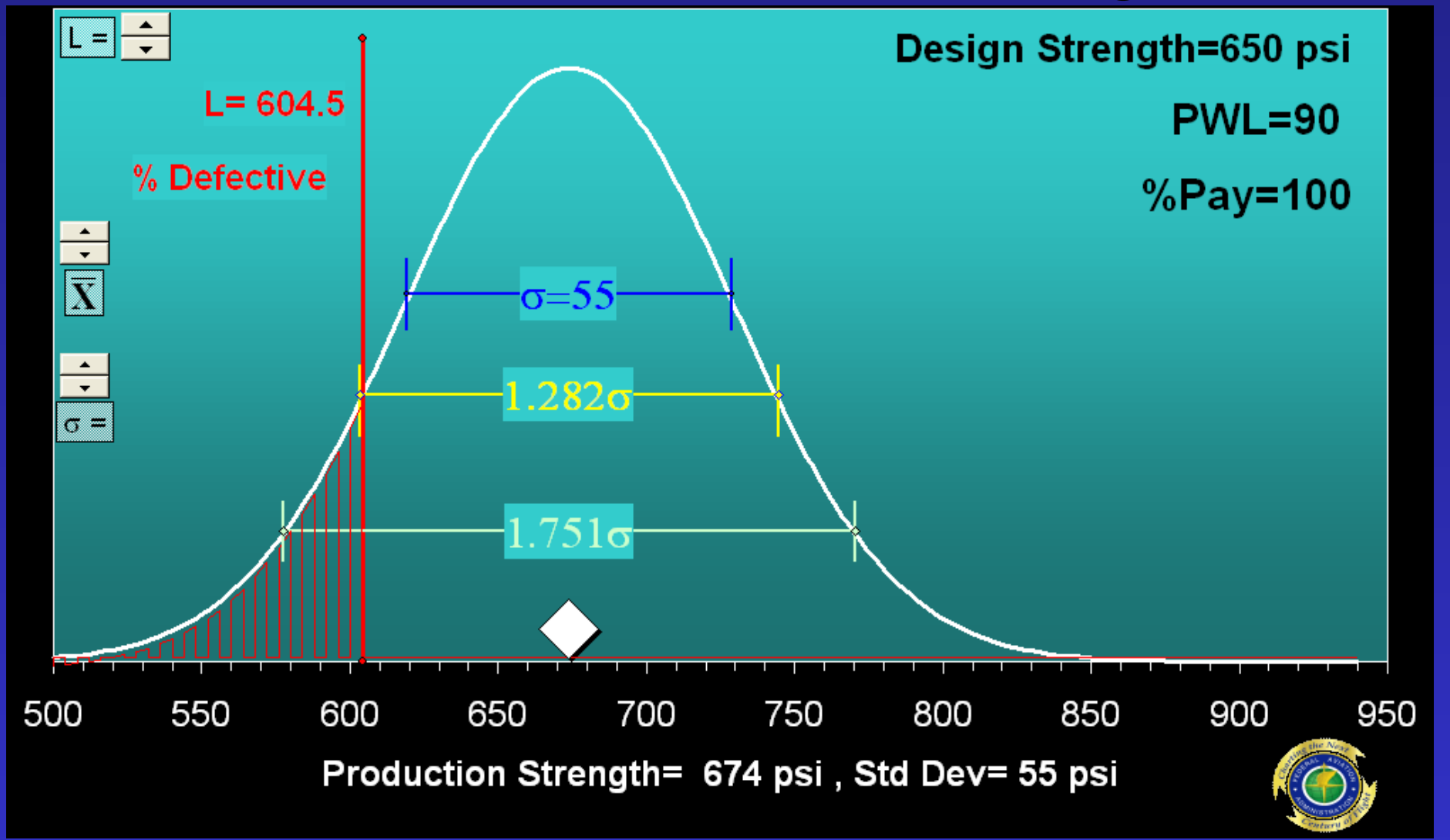
Minimum Corrective Action Items

- Fine and Coarse Aggregate Gradation. When two consecutive averages of five tests are outside of specification limits, immediate steps, including a halt to production, shall be taken to correct the grading.
- Aggregate Moisture Content. Whenever the moisture content changes by more than 0.5 percent, the scale settings for the aggregate batcher(s) and water batcher shall be adjusted.
- Slump and Air Content. The Contractor shall halt production and adjust the amount of air-entraining admixture whenever:

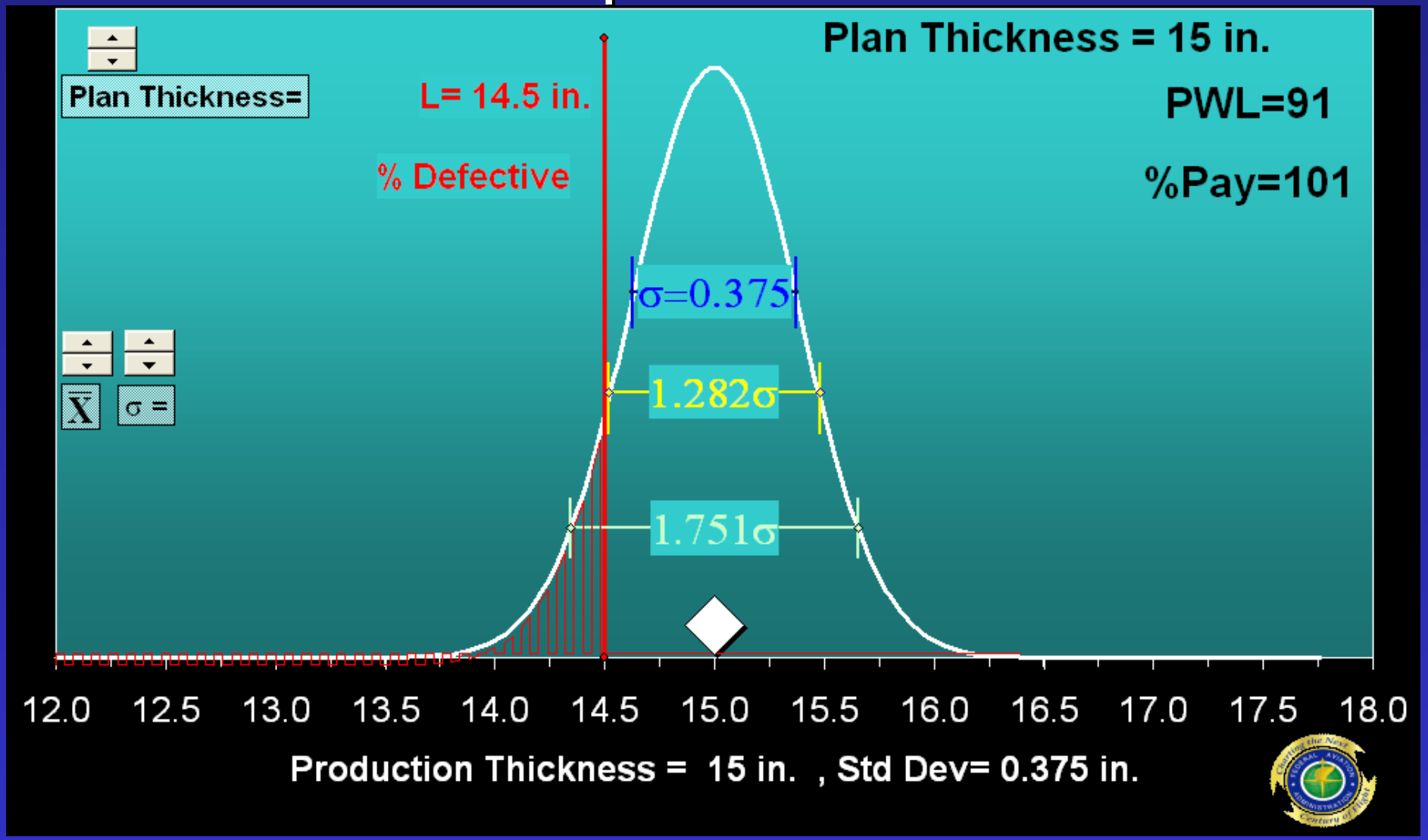
  (1) one point falls outside the Suspension Limit

  (2) two points in a row fall outside the Action Limit.

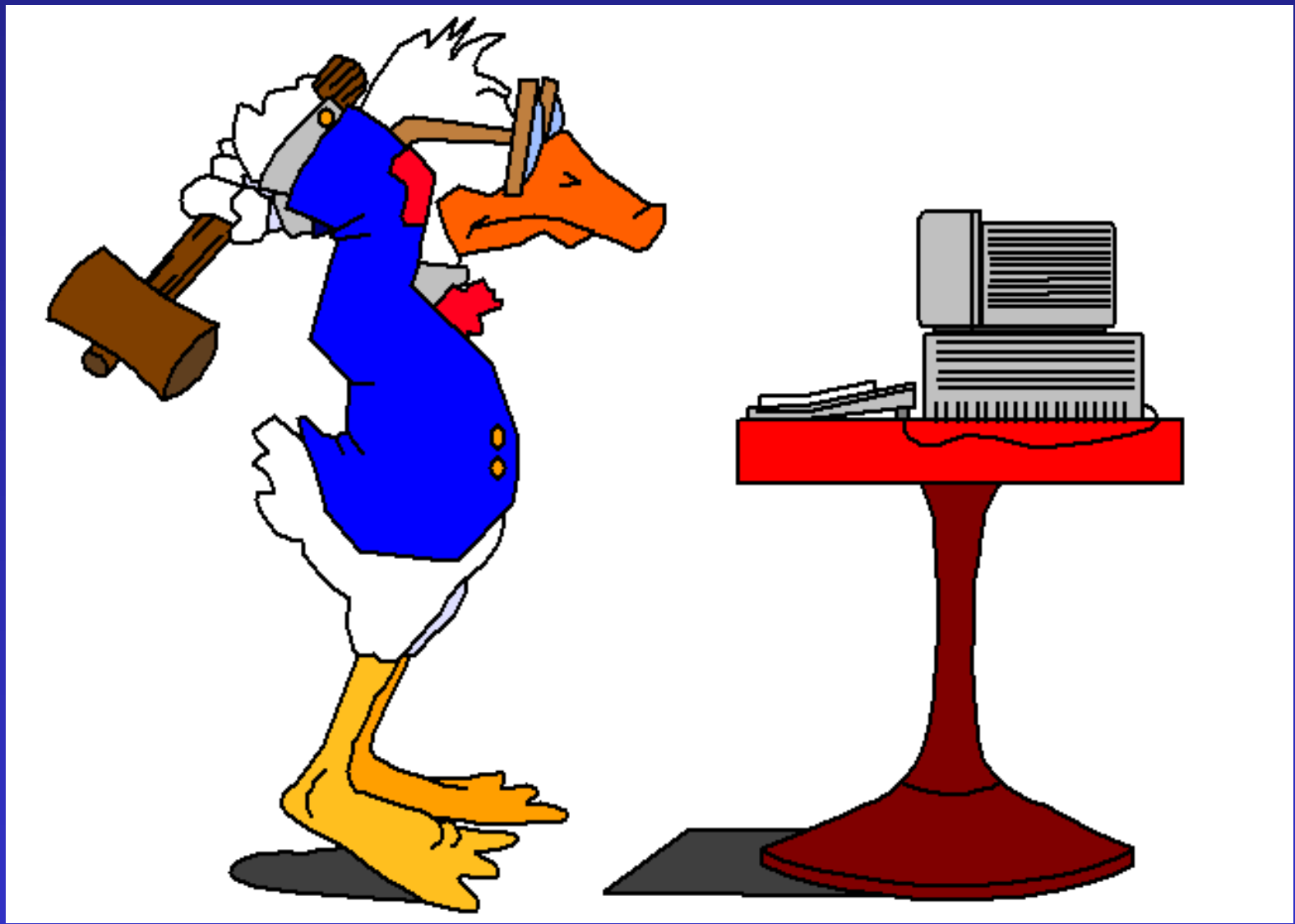
FAA Assumption for Strength



FAA Assumption for Thickness



Excel Spreadsheet and PWL



FAA Role

- Headquarters Offices
  - Issue Guidance
  - Request Reports from Regions
  - Develop Strategy to Add Quality Control to More Specification Items
- Region Offices
  - Administer Guidance
  - Request Reports from Sponsors

Questions / Dialog / Interaction

- What are your most common issues?
  - Item P-401
  - Item P-501